REMARKS/ARGUMENTS

Claims 15-21, 24 and 31-43 were examined and rejected. Applicant believes the claims as originally filed and previously presented are patentable, but have amended to expedite prosecution and clarify the invention. Applicants cancel no claims and amend claims 15, 17, 21 and 31. Applicants submit that no new matter is added therein as the amendment to claim 15 is supported at least by claim 23, paragraphs 56 and 59 and FIG. 1 of the application; and amendment to claim 31 is supported at least by claim 24. Amended claim 17 is supported at least at paragraphs 40, 42, 49, 50 and 52 of the application; and amended claim 21 is supported at least by paragraphs 58, 81 and 88 of the application. Hence, Applicants respectfully request reconsideration of pending claims 15-21, 24 and 31-43 as amended.

I. Claims Rejected Under 35 U.S.C. § 102

The Patent Office rejects claims 31, 32, 35 and 36 under 35 U.S.C. § 102(b) as being anticipated by U.S. Patent No. 5,810,007 to Holupka et al. (Holupka). It is axiomatic that to be anticipated every limitation of a claim must be disclosed in a single reference.

Applicants respectfully disagree with the rejection above of claim 31 for at least the reason that the cited references do not disclose imaging a plurality of markers and an in vivo landmark using a first imaging modality, imaging the plurality of markers in a second modality, wherein the in vivo landmark is not imageable in the second modality, and monitoring in vivo at least one physiological parameter of the body, as required by amended claim 31. Specifically, Holupka teaches ultrasound probe 12 having transducer array 18 and fiducials 20 and 22 that are imaged in both the ultrasound image (Fig. 3) and in the simulator film image (Fig. 4) (see column 4 lines 2-17). Consequently, the Patent Office has not identified and Applicants are unable to find any disclosure or teaching of the above noted limitations of amended claim 31.

II. Claims Rejected Under 35 U.S.C. § 103

Claims 15-21, 24 and 43 are rejected under 35 U.S.C. § 103(a) as being unpatentable in view of U.S. Patent Publication No. 2002/0077543 to Grzeszczuk, et al. (Grzeszczuk). Claims 33, 34 and 37-42 are rejected under 35 U.S.C. § 103(a) as being

unpatentable over Holupka. For a claim to be obvious, each limitation of that claim must be taught or suggested by at least one properly combined reference.

Applicants disagree with the rejection above for claim 15 for at least the reason the cited references do not teach or suggest identifying a position of the sensor device relative to an internal coordinate system using an imaging technique, wherein the internal coordinate system is based on a plurality of markers at least one of which is other than the sensor located in the body having an imageable marker property, and wherein identifying comprises identifying the position relative to at least one of the plurality of markers, as required by amended claim 15.

Grzeszczuk teaches a method and system for tracking a medical instrument as it moves in an operating space of a patient (see abstract). Grzeszczuk teaches that the medical instrument may be a catheter having flexible or rigid construction (see paragraph 35) or percutaneously implanted marker (see paragraph 56). However, there is no teaching, conception, enablement or motivation in Grzeszczuk of markers and a sensor device in the patient, wherein an internal coordinate system is based on the markers other than the sensor, as required by claim 15.

Moreover, Applicants traverse that it would have been obvious to a practitioner at the time of the invention to modify the catheter or marker of Grzeszczuk to be a sensor device, and respectfully request the Patent Office provide a reference in support of this position in accordance with MPEP § 2144.03.

In addition, by claiming an internal coordinate system based on a plurality of markers at least one of which is other than the sensor located in the body, some embodiments described in the specification, without limitation thereto, provide benefits which may include more accurately positioning a sensor within a location of a body that deforms or distorts by implanting markers and the sensor into the anatomical area that distorts so that a more accurate position of the sensor may be determined to more accurately measure delivery of radiation to certain areas to ensure a target volume receives sufficient radiation and that injury to the surrounding and adjacent non-target volumes is minimized, such as described at paragraph 58, 81 and 88 of the application. However, none of the cited references conceive of or provide the above-noted benefits.

In addition to being dependent on allowable base claim 15, Applicants disagree with the rejection above of dependent claim 18 and traverse that it would have been obvious to a person of ordinary skill to use a sensor device having a length than

approximately 26 millimeters, as required by claim 18. Applicants respectfully request that the Patent Office provide a reference in support of this position in accordance with MPEP § 2144.03. As noted above for claim 15, Grzeszczuk only teaches medical devices being catheters or markers, neither of which would motivate a practitioner to conceive of a sensor as required by claim 15, or a sensor having a length, as required by claim 18. Hence, for this additional reason, Applicants respectfully request the Patent Office withdraw the rejection above of claim 18.

In addition to being dependent on allowable base claim 15, Applicants disagree with the rejection above of claim 21 for at least the reason that the cited references do not disclose tracking the position of the sensor device over time as the body moves, as required by claim 21. Grzeszczuk discloses a principle of operation that an initial registration of the patient's anatomy is performed (see paragraph 38), but that the technique does not enable real-time DRF for the sake of target movement monitoring, and thus the periodic re-registration principle of operation is required to correct misregistration by reacquiring new fluoroscopic images and running a fairly automatic procedure (see paragraph 56). It can be appreciated that this re-registration requirement teaches against tracking the position of the sensor over time as the body moves, since it requires a reacquisition of images and running a procedure to complete the re-registration (see paragraph 38).

Each dependent claim not noted above is patentable for the reasons discussed above for its base claim, in addition to the further non-obvious limitations added by each dependent claim.

Hence, Applicants respectfully request the Patent Office withdraw the rejection for all the claims for at least all the reasons above.

CONCLUSION

In view of the foregoing, it is believed that all claims now pending patentably define the subject invention over the prior art of record, and are in condition for allowance and such action is earnestly solicited at the earliest possible date. If the Examiner believes a telephone conference would be useful in moving the case forward, he is encouraged to contact the undersigned at (310) 207-3800.

If necessary, the Commissioner is hereby authorized in this, concurrent, and future replies, to charge payment or credit any overpayment to Deposit Account No. 02-2666 for any additional fees required under 37 C.F.R. §§ 1.16 or 1.17, particularly extension of time fees.

Respectfully submitted,
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CERTIFICATE OF MAILING

I hereby certify that this correspondence is being deposited with the United States Postal Service as First Class Mail with sufficient postage in an envelope addressed to: Mail Stop RCE, Commissioner for Patents, P. O. Box 1450, Alexandria, Virginia 22313-1450 on 5/12/08.

Angelo J. Gaz — 5/12/08 Date